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pictures thus obtained the inventors, Herr Friedmann and Herr Reiffenstein, have devised another means of making each eye see only one, and that one its own particular image. This consists of the application of the fact that when placed against a white background the image on a positive transparency is visible and that when seen against a black background it becomes invisible, while should the image be bleached the contrary is the case. From the negatives which have been obtained in the ordinary way with the stereoscopic camera are made, therefore, from one, an ordinary transparent positive, and, from the other, a negative which is afterwards bleached. Let it be assumed that from the negative corresponding to the image seen with the right eye the ordinary positive is made and that the left eye's picture becomes the bleached negative. If these two transparencies were super-imposed one upon the other and laid upon a white background only the right-eye picture would be visible. On the other hand, if placed upon a black background only the left-eye picture would be seen. It is, however, necessary that both eyes should see their respective pictures simultaneously. For this a background is required which to the right eye appears white and to the left eye black. This is provided by a sheet of glass, the back surface of which is prepared in a special manner, while the front surface is ribbed convexly, whereby the rays of light falling upon this surface are broken in such a way as to make it appear black or white according as looked at from one side or the other. The problem is, therefore, solved. The two transparencies are placed one upon the other and then both upon this background. The right eye sees only its proper image and the left eye likewise. These combine automatically, as is the case when a stereoscope is used, and the result is a true plastic picture.

The inventors exhibit five or six specimens of such photographs to which they have given the name of "stereographs." Three of these appeared to the writer of this article to be almost faultless. One of them represented a

lump of quartz in which even the shimmer on the surface was reproduced; another, a spray of orchids in a vase, and the third, the skeleton of a gorilla. In the other specimens the two images did not seem to combine easily. The inventors are making arrangements for the manufacture in cheap and handy form of "backgrounds" which they hope before long to have brought to such a state of perfection that the process will be generally employed. With such "backgrounds" the inventors state that pictures can be looked at like any other photograph. In the case of the stereographs now being exhibited the effect of the black-and-white background is, however, obtained by a different method, which necessitates their being viewed by transmitted light.

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#### SCIENTIFIC NOTES AND NEWS

THE sixty-fifth meeting of the American Association for the Advancement of Science opened at Atlanta on Monday, Dr. Edmund B. Wilson, of Columbia University, being introduced as president, and Professor Edward C. Pickering, of Harvard University, giving the address of the retiring president on "The Study of the Stars," printed in this issue of SCIENCE. Subsequent issues will contain other addresses and reports of the meetings at Atlanta and of the meetings held simultaneously at Philadelphia, Princeton, New York and New Haven.

M. JEAN PERRIN, professor of physical chemistry of the University of Paris, has been given the degree of doctor of science by Columbia University, to which he is this year visiting professor.

SIR PHILIP WATTS, K.C.B., F.R.S., has received the Order of the Rising Sun (second class) from the Emperor of Japan.

DR. CHARLES DEGARMO, since 1898 professor of the science and art of education at Cornell University, will retire at the close of the next summer session.

THE Senate of the University of St. Andrews has invited Professor J. Arthur Thom-

son, since 1899 regius professor of natural history at Aberdeen, to be the Gifford lecturer for the years 1914 to 1916.

MRS. ELLA FLAGG YOUNG has been reinstated as superintendent of schools by the Chicago Board of Education by a vote of thirteen to seven, the minority of seven declining to cast a ballot.

DR. KEVIN BURNS, of the Lick Observatory, has been appointed to a post in the Bureau of Standards, Washington.

THE Royal Society's studentship on the foundation of the late Professor Tyndall for scientific research on subjects tending to improve the conditions to which miners are subject has been awarded for the ensuing year to Mr. J. I. Graham, of Bentley Colliery, Doncaster, for an investigation into the cause of spontaneous combustion of coal.

DR. LYMAN C. NEWELL, professor of Chemistry, Boston University, has been elected president of the University Club of Malden, Mass.

AT the educational conference, held at the University of London, beginning on December 26, twenty-one institutions were represented. Mr. James Bryce delivered the inaugural address, entitled "Salient Educational Issues."

"SCENIC Features of North America from the Geological Point of View" is the general subject of a series of illustrated lectures to be given by Professor Wallace W. Atwood, of the department of geology of the University of Chicago, at the West Side center of the University Lecture Association in Chicago. The series begins on January 3 and ends January 31, one lecture being given each week.

THE following public lectures are announced by the Cornell Chapter of the Sigma Xi: "Recent Investigations in Organic Chemistry," by Professor A. W. Browne, January 19; "Electric Operation of Panama Canal Locks," by John W. Upp, M.E., '89, of the General Electric Company, February 3; "Some General Bearings of Embryology," by Professor B. F. Kingsbury, February 23;

"Electric Waves and Wireless Telegraphy," by Professor Ernest Merritt, March 30; "The Experimental Development of the Art of Sewage Disposal," by Professor H. N. Ogden, April 30; "Some Recent Problems in Geometry," by Professor Virgil Snyder, May 25.

ON November 20, Professor M. A. Rosanoff, of Clark University, gave a talk before the Sigma Xi Society at the Worcester Polytechnic Institute on his scientific experiences at the *Versammlung deutscher Naturforscher* in Vienna last September.

MR. EMERY C. KOLB, of Grand Canyon, Arizona, gave a lecture, illustrated with colored slides and motion pictures, before the Geographic Society of Chicago on December 19, the title being "Photographic Exploration of the Canyons of the Colorado River."

DR. STUART PATON will give a series of public lectures at Princeton University on Thursday afternoons at five o'clock on The Study of Human Activities in Relation to Social, Educational and Ethical Problems. The dates and subjects are as follows: February 12, "The Individual. Life as a Process of Adjustment"; February 19, "Adjustments in the Reflex, Automatic and Conscious Levels of Activity"; February 26, "Synthetic and Inhibitory Mechanisms"; March 12, "The Personality"; March 19, "The Problem of Degeneracy. The Feeble-minded, the Delinquent, the Criminal"; March 26, "The Intelligent Direction of Human Activities. Education"; April 2, "Science and Culture."

AT the annual public meeting of the Paris Academy of Sciences, held on December 15, M. Gaston Darboux, the permanent secretary, pronounced a eulogy on Henri Poincaré, the famous mathematician, who died in July last year. The speech included an account of Henri Poincaré's early life.

IT is proposed to establish a permanent memorial to the late Sir William White, K.C.B., F.R.S. The Institution of Civil Engineers, the Institution of Mechanical Engineers, and the Institute of Marine Engineers, and other bodies are supporting the plan, and

have invited their members to contribute. A general committee under the chairmanship of Lord Brassey has been formed. The form which the memorial is to take will depend upon the support which is given, about \$7,500 having already been received.

DR. CHARLES BUDD ROBINSON, economic botanist of the Bureau of Science of the Philippine Islands has been killed by natives in the Amboy Islands in the Malay Archipelago. Dr. Robinson was born in Pictou, N. S., in 1871; he received his bachelor's degree from Dalhousie University in 1891 and his doctor's degree from Columbia University in 1906. He was the author of researches on the economic and systematic botany of the Philippines.

THE death is announced in London on December 15, of Dr. Penry Vaughan Bevan, professor of physical science at the Royal Holloway College.

THE U. S. Civil Service Commission announces an examination for technical assistant in pharmacology, for men only, to fill vacancies in this position in the Division of Pharmacology, Hygienic Laboratory, Public Health Service, at salaries ranging from \$1,800 to \$2,000 a year.

THE next grants from the Elizabeth Thompson Science Fund will be made in February, 1914. Applications should be sent in to the secretary, Dr. Charles S. Minot, Harvard Medical School, Boston, Mass., before February 1, 1914.

THE Edward N. Gibbs Memorial Prize Fund, the income of which amounts to about five hundred dollars, was established by the wife and daughter of the late Edward N. Gibbs, and is used in aiding investigators into the cause and treatment of diseases of the kidney. The recipient of the fund is chosen annually. The committee will select the worker for 1914 about the first of February, and request all persons who desire to work under this fund, to send to the committee of the Edward N. Gibbs Memorial Prize Fund, 17 West 43d Street, N. Y. City, their applica-

tion together with a statement of their fitness to prosecute such investigations, giving the laboratory in which they have studied, and any researches conducted by them, in order that the committee may be guided in the selection of the recipient of the fund for 1914.

THE Colony of the Straits Settlements has voted a sum of £350 to Mr. Chamberlain's fund for the extension of the London School of Tropical Medicine.

News has been received from the Stefansson expedition that the scientific men and members of the crews of the *Alaska* and *Mary Sachs* were safe and well in winter quarters at Collinson Point, fifty miles from Flaxman Island, on the Arctic Circle.

THE Puget Sound Marine Station located at Friday Harbor, Washington, will be open next summer under the directorship of Professor Theodore C. Frye, the head of the department of botany at the University of Washington. Plans are under consideration to increase facilities and to make most satisfactory the conditions surrounding the investigations in marine biology which are in progress. The laboratory will be open during the entire summer season. Professor Frye is now in the east consulting with those interested in the problems under consideration at Friday Harbor.

THE Second Annual Conference of Editors of Agricultural Colleges and Experiment Stations will be held at the State University of Kentucky, June 25 and 26, 1914. Invitations to this conference have been sent to all the agricultural colleges and stations in the United States. Inquiries in regard to the meeting may be forwarded to B. E. Powell, executive secretary of Conferences, Urbana, Illinois.

At a meeting of the Royal Institute of British Architects, Mr. Lionel Earle, permanent secretary of the Office of Works, in the course of discussion on a paper by Mr. W. A. Forsyth on the repair of ancient buildings, mentioned that the treatment of decaying stone due to sulphuric acid in the air had

given his department much anxiety. The matter was of such far-reaching importance that the treasury had granted a sum of money for one, two, or three years to institute a scientific inquiry, and he hoped to obtain the services of Professor Laurie, of the Heriot-Watt College, Edinburgh, to that end. The Foreign Office had also consented to inquire of the governments of France, Germany, Italy, Greece and America whether any treatment had been evolved in these countries to combat this evil.

AN efficiency limitation of quite a different type from that imposed by the inadequate and dangerous quarters occupied by the United States Geological Survey is presented, according to the annual report of the director, recently made to Secretary Lane, in the restrictions placed in one way or another upon the selection of personnel. Under "lump-sum" appropriations there is a fair opportunity to obtain high-grade service in the scientific and technical positions, yet even here the restraining influence of precedent prevents attaching to the higher positions salaries that are more than a fraction of those which the well-trained specialists best fitted for those positions can obtain for similar work in the service of corporations. This condition has resulted in many of the members of the Geological Survey leaving government service at the time when they have become most valuable as public servants. Thus in the four and one half years ending January, 1913, the number of geologists who left the government service for the primary purpose of bettering their financial condition was 41, and these men are known to have received salaries outside of the public service amounting to an average immediate advance of 149 per cent., or practically two and one half times the salaries paid them by the Geological Survey.

THE Euphrates barrage from Hindich north to Bagdad was opened on December 12. It is the portion of the great irrigation works designed by Sir William Willcocks, the designer of the Assouan dam. The system, according to a dispatch from London to the *Boston Transcript*, will cost, when completed, no less

than \$115,000,000, of which \$25,000,000 has already been expended on the present section of the work, known as the Feluja project. Three million acres of what were in early history the finest agricultural lands are to be eventually reclaimed. When the system is completed the Tigris, the Euphrates and the Akkar Kuf Lake will form part of a controlled system of canals, weirs and barrages, whereby the pernicious silt is to be separated, floods are to be prevented, and wheat-bearing land is to be nourished with water. It is estimated that the cultivated area will be doubled, and that the crop of wheat along the Euphrates will be trebled. The scheme would also result in a vast increase in the yield of cotton. It consists of providing a means of escape for the flood waters of the Euphrates along the depressions of the Pison, but it also entails the construction of a great central canal, regulators to control the supply from the Euphrates at the head of the Sakhnlawia, a weir on the Tigris, a canal for irrigation to the north of Bagdad, another canal along the right bank of the Tigris, and the building of a railway along the left bank of this canal for the transport of the harvests. Moreover, the construction work would include a railway to connect Bagdad with the Mediterranean by a short and cheap route. The project was submitted by Sir William to the Turkish government in 1909, after a year's study of the situation, a study which he continued through the two years subsequently up to the time of his resignation in July, 1911, as adviser to the Turkish Ministry of Public Works.

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#### UNIVERSITY AND EDUCATIONAL NEWS

WESTERN RESERVE UNIVERSITY will receive from the McBride family of Cleveland a lecture foundation with an endowment of \$50,000.

THE following changes concerning the admission of students to the Johns Hopkins Medical School have been announced. In 1913 the number of students in each class was limited to ninety. In order to receive consideration applications of incoming students must